

CLAIMS:

1. An attaching and removing unit of a lid for a wafer carrier comprising;

a lid holding plate that can move forward and backward relatively to a lid for a wafer carrier provided with a lock unit having a keyhole exposed outside, on a side of the keyhole;

a driver for causing the lid holding plate to move forward and backward; and

a key element protruding from the lid holding plate on a side of the lid in a pivotable manner, the key element disposed opposite the keyhole in a direction of the forward and backward movement;

wherein the lock unit is adapted to be locked and unlocked by the key element pivoting in the keyhole,

in a locked state, the key element can be inserted into and released from the keyhole,

in an unlocked state, the key element is engaged with and can not be released from the keyhole, while the lid holding plate holds the lid, and

the lid holding plate is provided with a lid-detecting unit for detecting whether the lid holding plate is holding the lid or not.

2. An attaching and removing unit of a lid for a wafer carrier according to claim 1, wherein:

the lid-detecting unit has:

a member to be detected whose position is changed dependently on whether the lid holding plate is holding the lid or not, and

a detector that detects a position of the member to be detected.

3. An attaching and removing unit of a lid for a wafer carrier according to claim 1, further comprising:

a controller that controls the key element in such a

manner that a control of the key element for returning to a starting-point thereof is not conducted if the lid holding plate is holding the lid, based on an output of the lid-detecting unit, when electric power starts to be supplied.

4. An attaching and removing unit of a lid for a wafer carrier according to claim 1, wherein:

a pushing member is provided on a surface of the lid holding plate on a side of the lid in such a manner that the pushing member can give a driving force to the lid in a direction of moving the lid away from the lid holding plate against the engagement of the key element and the keyhole.

5. An attaching and removing unit of a lid for a wafer carrier according to claim 4, wherein:

the pushing member has a rubber member on a surface thereof on the side of the lid.

6. An attaching and removing unit of a lid for a wafer carrier according to claim 1, wherein:

the wafer carrier is placed on a movable placing part that can move in the same directions as the forward and backward directions of the lid holding plate moved by the driver, and

the movable placing part is connected to a second driver for causing the movable placing part to move, via a buffering member.

7. An attaching and removing unit of a lid for a wafer carrier comprising;

a lid holding plate that can move forward and backward relatively to a lid for a wafer carrier provided with a lock unit having a keyhole exposed outside, on a side of the keyhole;

a driver for causing the lid holding plate to move forward and backward; and

a key element protruding from the lid holding plate on

a side of the lid in a pivotable manner, the key element disposed opposite the keyhole in a direction of the forward and backward movement;

wherein the lock unit is adapted to be locked and unlocked by the key element pivoting in the keyhole,

in a locked state, the key element can be inserted into and released from the keyhole,

in an unlocked state, the key element is engaged with and can not be released from the keyhole, while the lid holding plate holds the lid, and

a pushing member is provided on a surface of the lid holding plate on a side of the lid in such a manner that the pushing member can give a driving force to the lid in a direction of moving the lid away from the lid holding plate against the engagement of the key element and the keyhole.

8. An attaching and removing unit of a lid for a wafer carrier according to claim 7, wherein:

the pushing member has a rubber member on a surface thereof on the side of the lid.

9. An attaching and removing unit of a lid for a wafer carrier according to claim 7, wherein:

the lid holding plate is provided with a lid-detecting unit for detecting whether the lid holding plate is holding the lid or not.

10. An attaching and removing unit of a lid for a wafer carrier according to claim 7, wherein:

the lid has a pin hole in a surface thereof on a side of the lid holding plate, and

the lid holding plate has a positioning pin that protrudes from a surface thereof on a side of the lid, opposite the pin hole in the direction of the forward and backward movement.

11. An attaching and removing unit of a lid for a wafer

carrier according to claim 10, wherein:

the pushing member is arranged around the positioning pin.

12. An attaching and removing unit of a lid for a wafer carrier according to claim 11, wherein:

(the lid-detecting unit has: *rule*

a member to be detected whose position is changed dependently on whether the lid holding plate is holding the lid or not, and

a detector that detects a position of the member to be detected; and

the member to be detected is arranged in the pushing member.

13. An attaching and removing unit of a lid for a wafer carrier according to claim 10, wherein:

the pushing member is arranged around the key element.

14. An attaching and removing unit of a lid for a wafer carrier according to claim 13, wherein:

(the lid-detecting unit) ^{act} has:

a member to be detected whose position is changed dependently on whether the lid holding plate is holding the lid or not, and

a detector that detects a position of the member to be detected; and

the member to be detected is arranged in the pushing member.

15. An attaching and removing unit of a lid for a wafer carrier according to claim 7, wherein:

the wafer carrier is placed on a movable placing part that can move in the same directions as the forward and backward directions of the lid holding plate moved by the driver, and

the movable placing part is connected to a second driver

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16. (Amended) An attaching and removing unit of a lid for a wafer carrier comprising;

a lid holding plate that can move forward and backward relatively to a lid for a wafer carrier provided with a lock unit having a keyhole exposed outside, on a side of the keyhole;

a driving plate connected to the lid holding plate in a relatively movable manner, for causing the lid holding plate to move forward and backward; and

a key element protruding from the driving plate through the lid holding plate on a side of the lid in a pivotable manner, the key element disposed opposite the keyhole in a direction of the forward and backward movement;

wherein the lock unit is adapted to be locked and unlocked by the key element pivoting in the keyhole,

in a locked state, the key element can be inserted into and released from the keyhole,

in an unlocked state, the key element is engaged with and can not be released from the keyhole, while the lid holding plate holds the lid,

the lid holding plate is connected to the driving plate via a forcing member, and

the forcing member is adapted to push the lid holding plate toward the lid, against the engagement of the key element and the keyhole.

17. (Canceled)

18. (Amended) An attaching and removing unit of a lid for a wafer carrier according to claim 16, wherein:

the lid holding plate has a rubber member on a surface thereof on a side of the lid.

19. An attaching and removing unit of a lid for a wafer carrier according to claim 16, wherein:

the lid holding plate is provided with a lid-detecting unit for detecting whether the lid holding plate is holding

the lid or not.

20. An attaching and removing unit of a lid for a wafer carrier according to claim 16, wherein:

the lid has a pin hole in a surface thereof on a side of the lid holding plate, and

the lid holding plate has a positioning pin that protrudes from a surface thereof on a side of the lid, opposite the pin hole in the direction of the forward and backward movement.

21. An attaching and removing unit of a lid for a wafer carrier according to claim 16, wherein:

the wafer carrier is placed on a movable placing part that can move in the same directions as the forward and backward movement directions of the lid holding plate (by the driver, ^{unit} and

the movable placing part is connected to a second driver for causing the movable placing part to move, via a buffering member.

22. (Amended) An attaching and removing unit of a lid for a wafer carrier comprising;

a lid holding plate that can move forward and backward relatively to a lid for a wafer carrier provided with a lock unit having a keyhole exposed outside, on a side of the keyhole;

a driver for causing the lid holding plate to move forward and backward;

a key element protruding from the lid holding plate on a side of the lid in a pivotable manner, the key element disposed opposite the keyhole in a direction of the forward and backward movement;

a movable placing part on which the wafer carrier is placed and which can move in the same directions as forward and backward directions of the lid holding plate moved by the driver;

a second driver connected to the movable placing part, for causing the movable placing part to move; and

an attaching member that can come in contact with a surface of the wafer carrier placed on the movable placing part on a side of the lid,

wherein the second driver is connected to the movable placing part via a buffering member that can absorb a shock when the surface of the wafer carrier placed on the movable placing part on the side of the lid comes into contact with the attaching member,

the lock unit is adapted to be locked and unlocked by the key element pivoting in the keyhole in a state wherein the surface of the wafer carrier placed on the movable placing part on the side of the lid is in contact with the attaching member,

in a locked state, the key element can be inserted into and released from the keyhole, and

in an unlocked state, the key element is engaged with and can not be released from the keyhole, while the lid holding plate holds the lid.